



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/740,751	12/19/2000	Tongbi Jiang	23804-P002C2	8773

7590

09/25/2002

HUGH R. KRESS
Winstead Sechrest & Minick P.C.
Suite 2400
910 Travis Street
Houston, TX 77002

EXAMINER

CHANG, RICK KILTAE

ART UNIT

PAPER NUMBER

3729

DATE MAILED: 09/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/740,751

Applicant(s)

JIANG ET AL.

Examiner

Rick K. Chang

Art Unit

3729

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 August 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18-46 is/are pending in the application.
- 4a) Of the above claim(s) 20,24,25,28,33,37,38 and 41 is/are withdrawn from consideration.
- 5) ☒ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 18,19,21-23,26,27,29-32,34-36,39,40 and 42-46 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Species II and A in Paper No. 6 is acknowledged. Applicant's traverse of the requirement for election of species is noted, asserting that there is dubiousness to the restriction requirement. The traverse has been carefully considered, but is not persuasive because the claims are determined to be directed to mutually patentable inventions and the Office requires an election of species, a persuasive traverse is an admission on the record that applicant does not find the claimed species are patentable, one over the other. Having not done so, the reasons presented are not persuasive. Applicant is not entitled to examination of multiple independent inventions in one application. Moreover, examination of the independent inventions herein would clearly present a burden because the searches will not be coextensive. Accordingly, the requirement is repeated and made final. All non-elected Species will be combined if applicant will stipulate that they are obvious over each other.

The requirement is still deemed proper and is therefore made FINAL.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.
3. The abstract of the disclosure is objected to because the abstract does not describe a method of forming a socket sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details. A new abstract of the disclosure is required and must be presented on a separate sheet, apart from any other text.

Correction is required. See MPEP § 608.01(b).

Claim Objections

4. Elected dependent claims are objected to because of the following informalities: line 1: amend “A method” to –The method–. Further, give generic terminology for “Si3N4”.

Appropriate correction is required.

5. Claims 18 and 31 are objected to because of the following informalities: line 4: delete one of “said” and insert –the—before “first”. Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 31-32, 34-36, 39-40, and 42-46 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for performing steps, does not reasonably provide enablement for heating and cooling steps is performed prior to forming an aperture step, inserting a pin step is performed before the heating step, inserting a pin step is performed after the cooling step, cooling step is performed before the heating step, etc. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. The disclosure, as originally filed, fails to provide support for the heating and cooling steps to be performed after forming the first and second materials or before forming an aperture. Further, the disclosure, as originally filed, fails to provide support for forming an electrical contact pad to be formed after forming a layer of a first material and applying an interfacial material after forming an aperture.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

Art Unit: 3729

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 19, 26, 29, 31-32, 34-36, 39-40, and 42-46 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 19 and 26: forming and applying steps lack order in relation to the forming steps. Is the contact pad formed after or before forming steps? Is the applying step performed after or before forming steps?

Claim 29: what is a spin-on process. This claim lacks the required steps of spin-on process. Further, what is photo define/etching process got to do with the claims? It sounds like the photo define/etching process removes rather than bonding the first material. This process contradicts the bonding process as recited in the claims.

Claims 31: heating, inserting and cooling steps lack order. It is unclear when these steps are performed in relation to the forming steps. Further, it is unclear whether these steps are performed after the pin has been inserted. Is the cooling temperature higher than the heating temperature? Can the layers be cooled at higher temperature than the heating temperature? It is dubious whether the invention can perform without positive manipulative order.

NOTE: No art rejections have been applied to the claims 29, 31-32, 34-36, 39-40, and 42-46 since there are a great deal of confusion and uncertainty as to the proper interpretation of the limitations of claims. Therefore, it would not be proper to reject such claims on the basis of prior art. See MPEP 2173.06.

Claim Rejections - 35 USC § 103

Art Unit: 3729

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 18-19, 21 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leibowitz (US 4,513,055) in view of Mikagi (US 6,274,932).

Leibowitz discloses forming a circuit board having layers 18 and 20, applying an interfacial material (22) and a polyimide (col. 3, line 27).

Leibowitz fails to disclose forming an aperture to the first and second layers to expose the contact pad on the substrate.

Mikagi discloses forming an aperture to the first and second layers to expose the contact pad on the substrate (Fig. 2C).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Leibowitz by forming an aperture to the first and second layers to expose the contact pad on the substrate, as taught by Mikagi, for the purpose of electrically communicating with other electronic components mounted thereon a printed circuit board.

12. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leibowitz (US 4,513,055)/Mikagi (US 6,274,932) as applied to claim 18 above, and further in view of Merkel (US 6,187,700).

Leibowitz/Mikagi fails to disclose zirconium tungstate.

Merkel discloses providing zirconium tungstate.

Art Unit: 3729

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Leibowitz/Mikagi by providing zirconium tungstate, as taught by Merkel, for the purpose of providing greater range of negative coefficient of thermal expansion without yarns.

13. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leibowitz (US 4,513,055)/Mikagi (US 6,274,932)/ Merkel (US 6,187,700) as applied to claims 18 and 22 above.

Leibowitz/Mikagi/Merkel fails to disclose that zirconium tungstate is a single-crystal zirconium tungstate.

At the time the invention was made, it would have been an obvious matter of design choice to a person of ordinary skill in the art to provide zirconium tungstate in the form of single-crystal because Applicant has not disclosed that providing zirconium tungstate in the form of single-crystal provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with zirconium tungstate because it would still provide greater range of negative coefficient of thermal expansion with heating process equally well. Therefore, it would have been an obvious matter of design choice to modify Leibowitz/Mikagi/Merkel to obtain the invention as specified in claim 23.

14. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leibowitz (US 4,513,055)/Mikagi (US 6,274,932) as applied to claim 18 above, and further in view of Official Notice.

Leibowitz/Mikagi fail to disclose a ceramic substrate.

Official Notice is taken that it is well known in the art to use a ceramic substrate in the process of manufacturing printed circuit board for the purpose of making the assembly weigh less than a metal substrate.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Leibowitz/Mikagi by providing a ceramic substrate, as taught by Official Notice, for the purpose of making the assembly weigh less than a metal substrate.

15. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leibowitz (US 4,513,055)/Mikagi (US 6,274,932) as applied to claim 18 above, and further in view of Official Notice.

Leibowitz/Mikagi fails to disclose forming the second aperture smaller than the first aperture.

Official Notice is taken that it is well known in the art to form the second aperture smaller than the first aperture for the purpose of preventing a conductive material to escaping from the aperture during assembly.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Leibowitz/Mikagi by forming the second aperture smaller than the first aperture, as taught by Official Notice, for the purpose of preventing a conductive material to escaping from the aperture during assembly.

Conclusion

16. Applicants are duly reminded that a full and proper response to this Office Action that includes any amendment to the claims and specification of the application as originally

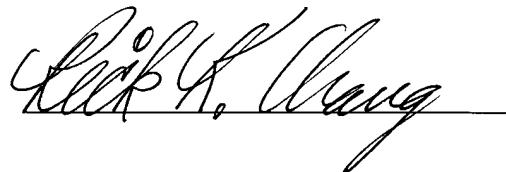
Art Unit: 3729

filed requires that the applicant point out the support for any amendment made to the disclosure, including the claims. See 37 CFR 1.111 and MPEP 2163.06.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rick K. Chang whose telephone number is (703) 308-4784. The examiner can normally be reached on 5:30 AM to 1:30 PM.

The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9302 for regular communications and (703) 872-9303 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1148.

A handwritten signature in cursive script, reading "Rick K. Chang", written over a horizontal line.

**RICHARD CHANG
PRIMARY EXAMINER**

RC
September 18, 2002